

Formation of CuO Nanoparticle in Glycerol and Its Catalytic Activity for Alkyd Resin Synthesis

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ABSTRACT

Palm oil based alkyd resin was prepared by alcoholysis–polyesterification reaction over hetero-homo catalytic system comprised of CuO nanoparticle and NaOH. In this work, CuO nano-sol was synthesized in glycerol at ambient condition via a chemical reduction method and successively used in alkyd resin preparation. The formation of CuO nanoparticle was monitored by X-ray absorption near edge structure spectroscopy (XANES) where a ‘red colour sol’ was detected. During the alkyd resin preparation, the catalytic behaviour of CuO nanoparticle was recorded by using titration method. The formation of the alkyd was confirmed by FTIR. The antibacterial behaviour of the additive was verified by Kirby–Bauer method and found that alkyd with CuO nanoparticle presented better antibacterial performance.

KEYWORDS: CuO nano-sol; Antibacterial activity; XANES; Palm oil